

CLAIMS:

1. A ceramic passive component which comprises a carrier substrate (1),
at least a first electrode (2) disposed thereon,
at least a dielectric (5) disposed thereon, and
at least a second electrode (6) disposed thereon,
5 characterized in that the dielectric (5) comprises a ferroelectric ceramic material with a
voltage-dependent relative dielectric constant ϵ_r .

2. A ceramic passive component as claimed in claim 1, characterized in that the following is chosen as the ferroelectric ceramic material with a voltage-dependent dielectric constant ϵ_r :

Pb(Zr_xTi_{1-x})O₃ (0 ≤ x ≤ 1) with and without excess lead, Ba_{1-x}Sr_xTiO₃ (0 ≤ x ≤ 1), Pb_{1-1.5y}La_y(Zr_xTi_{1-x})O₃ (0 ≤ x ≤ 1, 0 ≤ y ≤ 0.2), Pb(Zr_xTi_{1-x})O₃ (0 ≤ x ≤ 1) doped with Nb, Pb_{1-αy}La_yTiO₃ (0 ≤ y ≤ 0.3, 1.3 ≤ α ≤ 1.5), (Pb,Ca)TiO₃, BaTiO₃ with and without dopants, SrZr_xTi_{1-x}O₃ (0 ≤ x ≤ 1) with and without Mn dopants, BaZr_xTi_{1-x}O₃ (0 ≤ x ≤ 1), SrTiO₃ doped with, for example, La, Nb, Fe or Mn.

$$[\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3]_x-[\text{PbTiO}_3]_{1-x} \quad (0 \leq x \leq 1),$$
$$(\text{Pb,Ba,Sr})(\text{Mg}_{1/3}\text{Nb}_{2/3})_x\text{Ti}_y(\text{Zn}_{1/3}\text{Nb}_{2/3})_{1-x-y}\text{O}_3 \quad (0 \leq x \leq 1, 0 \leq y \leq 1, x + y \leq 1),$$
$$\text{PbNb}_{4/5x}((\text{Zr}_{0.6}\text{Sn}_{0.4})_{1-y}\text{Ti}_y)_{1-x}\text{O}_3 \ (0 \leq x \leq 0.9, \ 0 \leq y \leq 1), \ (\text{Ba}_{1-x}\text{Ca}_x)\text{TiO}_3 \ (0 \leq x \leq 1),$$
$$(\text{Ba}_{1-x}\text{Sr}_x)\text{TiO}_3 \ (0 \leq x \leq 1), (\text{Ba}_{1-x}\text{Pb}_x)\text{TiO}_3 \ (0 \leq x \leq 1), (\text{Ba}_{1-x}\text{Sr}_x)(\text{Ti}_{1-x}\text{Zr}_x)\text{O}_3$$
$$(0 \leq x \leq 1, 0 \leq y \leq 1),$$

- a) $\text{Pb}(\text{Mg}_{1/2}\text{W}_{1/2})\text{O}_3$

- b) $\text{Pb}(\text{Fe}_{1/2}\text{Nb}_{1/2})\text{O}_3$

- c) $\text{Pb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$

- d) $\text{Pb}(\text{Ni}_{1/3}\text{Nb}_{2/3})\text{O}_3$

- e) $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$

- f) $\text{Pb}(\text{Sc}_{1/2}\text{Ta}_{1/2})\text{O}_3$

as well as combinations of the compounds a) to f) with PbTiO_3 and $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ with and without excess lead.

3. A ceramic passive component as claimed in claim 1, characterized in that the first electrode (2) and/or the second electrode (6) comprise(s) at least a first and a second electrically conducting layer.

5 4. A ceramic passive component as claimed in claim 3, characterized in that the first electrically conducting layer of the electrodes (2, 6) comprises Ti, Cr, Ni_xCr_y ($0 \leq x \leq 1$, $0 \leq y \leq 1$) or Ti_xW_y ($0 \leq x \leq 1$, $0 \leq y \leq 1$).

10 5. A ceramic passive component as claimed in claim 3, characterized in that the second electrically conducting layer of the electrodes (2, 6) comprises a metal or an alloy.

6. A ceramic passive component as claimed in claim 1, characterized in that the carrier substrate (1) comprises a ceramic material, a ceramic material with a glass planarization layer, a glass-ceramic material, a glass material, or silicon.

15 7. A ceramic passive component as claimed in claim 1, characterized in that the dielectric (5) comprises multiple layers.

20 8. A ceramic passive component as claimed in claim 1, characterized in that a protective layer (7) of an inorganic material and/or an organic material is laid over the entire component.

25 9. A voltage-controlled oscillator with as its capacitive component a ceramic passive component which comprises a carrier substrate (1), at least a first electrode (2) disposed thereon, at least a dielectric (5) disposed thereon, and at least a second electrode (6) disposed thereon, characterized in that the dielectric (5) comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r .

30 10. A filter with as its capacitive component a ceramic passive component which comprises a carrier substrate (1), at least a first electrode (2) disposed thereon, at least a dielectric (5) disposed thereon, and at least a second electrode (6) disposed thereon, characterized in that the dielectric (5) comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r .

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11. A delay line with as its capacitive component a ceramic passive component which comprises a carrier substrate (1), at least a first electrode (2) disposed thereon, at least a dielectric (5) disposed thereon, and at least a second electrode (6) disposed thereon, characterized in that the dielectric (5) comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r .
12. The use of a ceramic passive component which comprises a carrier substrate (1), at least a first electrode (2) disposed thereon, at least a dielectric (5) with a voltage-dependent relative dielectric constant ϵ_r disposed thereon, and at least a second electrode (6) disposed thereon as a capacitive component.